

March 7, 2018

REQUEST FOR PROPOSAL

NOTICE TO BIDDERS

Sealed proposals will be received by the Board of Water and Light (BWL) up to **2:00 P.M., local time, Wednesday, 03/21/18**, for furnishing:

Mid-Michigan Bulk Water Chemicals Consortium 2018

Proposals must be in full accordance with the enclosed Specification.

Proposals may be submitted via hard copy or electronic format. If submitting hard copy proposals, please submit two (2) signed BWL Proposal Form(s) with attachments and supplemental information to the **Board of Water and Light, Attn: Cathy Davila, Purchasing and Warehousing Department, 1232 Haco Dr, Lansing, Michigan 48910**. Do not include copies of the other BWL RFP documents in your proposal package. The proposal package shall be marked on the outside of the cover with:

- (a) The Bidder's name;
- (b) The title of the Specification;
- (c) Attention: Rachelle Hall, Board of Water and Light;

Electronic copies shall be in a non-protected, Adobe pdf format and e-mailed to sealedbids@lbwl.com. For ease of identification, enter "**(your company name) Chemical Consortium Bid**" in the subject line of your e-mail proposal. You will receive an automatic reply to your submittal which confirms the BWL has received your emailed message.

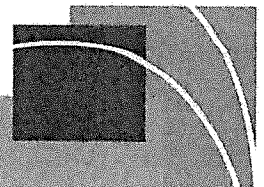
The BWL reserves the right to reject any or all proposals, waive irregularities or technicalities in any proposal, and accept any proposal in whole or in part, which in the opinion of the BWL, is in its best interest. The BWL does not limit the methods or factors to be used for evaluation.

Questions regarding this RFP will be accepted through **Wednesday, 3/14/2018**. Responses to these questions will be issued to all bidders via addenda to this RFP (reference Article 6 in the enclosed Instruction to Bidders). Direct all questions concerning this Request for Proposal via email to **Cathy Davila** at catherine.davila@lbwl.com.

Sincerely,

BOARD OF WATER AND LIGHT

Cathy Davila
Purchasing & Warehousing Department
(517) 702-6288
(517) 702-6042 Fax
catherine.davila@lbwl.com



INSTRUCTIONS TO BIDDERS
Mid-Michigan Bulk Water Chemical Consortium 2018

1. THE REQUEST FOR PROPOSAL CONSISTS OF THE FOLLOWING:

- (a) Notice to Bidders;
- (b) Instructions to Bidders;
- (c) Addenda, if issued;
- (d) Scope of Work / Specifications, including
 - (i) Special Requirements;
 - (ii) Drawings and List of Drawings.
- (e) Proposal Form;
- (f) Sworn and Notarized Affidavit of Compliance - Iran Economic Sanctions Act; and
- (g) Terms and Conditions for Consulting Services.

2. PROPOSAL SECURITY

N/A

3. TERMS AND CONDITIONS

Do not submit BIDDER's standard terms and conditions as a replacement to the BWL's Standard Terms and Conditions. BIDDER shall submit their proposal based upon the BWL's Standard Terms and Conditions as attached. BIDDER may request clarifications, tender exceptions consistent with Section 8 (or provide alternative language that corresponds to a tendered exception as provided in Section 8) to the BWL's Standard Terms and Conditions. Exceptions to the BWL's Standard Terms and Conditions must be noted on the Proposal Form in the space provided. Wholesale rejection of the BWL's Standard Terms and Conditions, as well as replacing with BIDDER'S standard terms and conditions will not receive consideration and result in a rejection in BIDDER'S proposal in its entirety. Further, proposals which are submitted and contingent upon BIDDER'S standard terms and conditions will be rejected.

4. BIDDER'S RESPONSIBILITY

It shall be the BIDDER'S responsibility to be familiar with the Proposal Documents and with the BWL, scope of work, and conditions that are likely to be encountered. BIDDER shall visit the site and specific areas on the site wherein the Work will be performed.

Any failure by the successful BIDDER to familiarize itself with conditions likely to be encountered, to acquaint itself with the available information, or to attend any meeting of BIDDERS shall not relieve the BIDDER from responsibility for providing the specified equipment, materials, and service. A failure to comply with this requirement does not constitute grounds for extra compensation over the pricing stated in the BIDDER'S proposal.

BIDDER shall be prepared to make a presentation at the BWL's request on its proposal and to answer questions.

5. AVAILABILITY OF LABOR AND MATERIALS

The BWL will not furnish any labor, facilities, services, utilities, materials, equipment or supplies unless specifically stated in the Proposal Documents.

BIDDER shall assess and determine the availability of necessary labor and the prevailing wages applicable to that workforce. In addition, BIDDER shall assess and determine the availability of materials and equipment necessary to fulfill the contract in a complete and timely manner. The BWL will not honor any claim for additional cost premised on the unavailability of materials or equipment, shortage of labor, or unexpected wage rates.

6. ADDENDA

The BWL will clarify any questions or correct the Request for Proposal by the issuance of an Addendum to all BIDDERS.

Each BIDDER shall acknowledge receipt of each Addendum by filling in the blank space provided on the Proposal Form.

7. DRAWINGS

N/A

8. PREPARATION OF PROPOSAL FORM

The Proposal Form is included in the Proposal Documents. BIDDER shall prepare proposals and submit them as stated in the Notice to Bidders.

Proposals must be prepared in full accordance with the Proposal Documents. The proposal price(s) stated on the Proposal Form must include all cost provisions of the complete Scope of Work. If the BIDDER chooses to submit an alternate or take an exception to any provision contained in the Proposal Documents, the alternate or exception must be specifically stated in BIDDER'S proposal, must reference the objectionable article of the Proposal Documents, and must propose alternate language or alternate Work. Any exception to the Proposal Documents, including any exception to the BWL's Standard Terms and Conditions must be raised in BIDDER'S proposal as exceptions provided subsequently will not be considered. Once a purchase order has been issued, and the Acknowledgement returned, a binding contract exists between the parties and further negotiation of terms is not permitted.

Proposals received after the time and date for receipt of proposals will not be accepted. The BIDDER is responsible for timely delivery of the Proposal at the designated location and time for receipt of Proposals.

The Proposal must be signed with the full name and address of the BIDDER. Proposals received without signature will not be accepted. If the BIDDER is a co-partnership, the firm name and signature of all parties are required. If the BIDDER is a corporation, full corporate name, signature of authorized official is required. BIDDER shall certify that the person who signs the proposal is empowered to do so by the corporation. Such certificate shall be up-to-date and current at time of the Proposal Form submittal.

A proposal may not be modified, withdrawn or canceled unilaterally by the BIDDER for a period of sixty (60) days following the time and date designated for the receipt of Proposals, and BIDDER so agrees in submitting the Proposal. A proposal submission is a confirmation by the BIDDER that it is prepared to commence and complete the various stages of the Work as described in the Proposal Documents.

Expenses for developing and presenting proposals shall be the responsibility of the BIDDER. It is the BIDDER'S responsibility to ensure that no conflict of interest or other ethical concern precludes the BWL from considering BIDDER'S proposal.

9. SUBSTITUTION

Under certain circumstances, the Proposal Documents may permit substitution of products. Those areas where substitution is permitted will be designated with the qualifying phrase or equal as may be approved by the BWL REPRESENTATIVE. If BIDDER would like to substitute a product, BIDDER must make a proposal including the products specified in the Proposal Documents AND an alternate proposal including the proposed substitution, specifically referencing any price change based on the substitution.

BIDDER'S proposal shall contain data to substantiate that the substitution is, in fact, equal to the products specified. Substantiating data may consist of drawings or other documents necessary or helpful to indicate any modifications resulting from use of proposed substitutions. BIDDER bears the burden of proving that the proposed substitutions meet the quality standards established in the Proposal Documents.

If BIDDER is eventually awarded a Purchase Order, the Purchase Order will indicate whether the substitution was acceptable or whether the original product must be used.

The acceptance of a substitution does not alleviate BIDDER of any contractual responsibility.

10. BONDS

N/A

11. INSURANCE

The certificates of insurance required by the Contract Documents must also accompany the Acknowledgment of Award. All these documents should be directed to the attention of the BWL Buyer listed on the Notice to Bidders with a copy to the person designated as "BWL REPRESENTATIVE.". The purchase order number must be indicated on the Acknowledgement, bonds, and certificates of insurance.

12. EVALUATION OF PROPOSALS

All proposals will be sealed until the time designated on the Notice to Bidders. At the opening, the names of all BIDDERS will be made public.

To evaluate the proposals, the BWL will consider such factors as responsiveness of proposal, price, time of completion, exceptions to the Proposal Documents, financial stability, recent and past experience and similar factors in determining which proposal it deems to be in its best interest. The BWL does not herein limit the methods or factors to be used for evaluation. The intent of the evaluation process is to choose the best-evaluated proposal.

The BWL reserves the right to enter into private negotiations with the selected BIDDER(S), for further scrutiny, even though these negotiations may result in changes to the BWL specifications or to the BIDDER(S) services, price quotations, etc.

The BWL may reject any Proposal, waive irregularities or technicalities in any Proposal, and accept any Proposal in whole or in part. The BWL may cancel, in whole or in part, the entire Request for Proposal at any time prior to full execution of a contract between both parties.

13. QUESTIONS, MEETING OF BIDDERS, AND ADDENDA

In the beginning of the bid preparation period, the BWL REPRESENTATIVE may notify each BIDDER of a Meeting of BIDDERS to be held at a later date, usually during the second week of the proposal preparation time. If a meeting is held, BIDDERS are required to attend the meeting to present their questions about the Proposal Documents, to receive answers to questions, to receive copies of Addenda, to participate in open discussion of the Project, and to participate in the only conducted tour of the Site. The Notice of Meeting will give complete details about the meeting and instructions regarding preparation for the meeting.

Changes, revisions, and corrections that may result from the discussions that occur during the Meeting of BIDDERS will be confirmed by the issuance of an Addendum. Suggestions of topics for the Meeting agenda should be directed to the person designated on the Notice to Bidders.

14. CONTRACT PRICE

The contract price shall be equal to the proposal price adjusted to any price changes as agreed upon in writing by the BIDDER and the BWL.

The contract price may be modified via a change order upon mutual agreement of both parties.

15. EXECUTION OF ACKNOWLEDGMENT OF AWARD

The successful BIDDER shall, within twenty-four hours after issuance of the Purchase Order, return the properly executed Acknowledgment of Award to the person designated on the Notice to Bidders. BIDDER shall certify that the person who signs the Acknowledgment is empowered to do so. Upon execution, an agreement will be deemed consummated and the documents, as specified in the list of RFP documents set forth in Section 1 herein, along with any mutually agreed written changes, shall constitute the full and binding agreement between the parties. If the properly executed Acknowledgement, along with any required bonds and insurance certificates, are not returned within five (5) calendar days, the BWL may deem the Purchase Order rejected and offer the Purchase Order to another BIDDER without penalty.

16. CONFIDENTIALITY

All complete, in-process or conceptual work are the sole property of the BWL and may not be used without the consent of the BWL. Any product used, such as, drawings and specifications, photos, campaigns, drafts, etc. are the sole property of the BWL. All BWL information will be kept confidential at all times. The BIDDER shall not disclose to others, without the written consent of the BWL, any information concerning the service provided, the organization, its personnel, or its activities, which the BIDDER may obtain as a result of, or in connection with the performance of the services.

17. FREEDOM OF INFORMATION ACT (FOIA)

The BWL is subject to the Freedom of Information Act (MCL §15.231 et seq.). The BWL may be required to make available certain information submitted with your bid or proposal available to the public if requested. This information may include comparative pricing and other data which the BIDDER may normally consider to be proprietary or confidential. If the BIDDER submits any information it deems to be exempt from FOIA requirements, the BIDDER shall clearly mark it as such.

18. LOCAL PREFERENCE

Applies to bids of \$100,000 or greater only.

Businesses with an office in the BWL service area shall be given the following advantage when the BWL receives a sealed proposal:

- (a) After the proposals are evaluated and the best-evaluated proposal is selected, the BWL shall determine whether the best-evaluated BIDDER is a Local business.
- (b) If a Local business was not selected as the best-evaluated BIDDER due entirely to its proposal price being higher than the price of the best-evaluated proposal, the BWL shall determine whether the best-evaluated Local business's proposal was within 5% of the proposal price of the best evaluated proposal. If so, this Local business shall then have the opportunity to reduce its price to match the price of the original best-evaluated BIDDER, and upon such agreement, shall be deemed the best-evaluated proposal.
- (c) If more than one Local business is within 5% of the price of the best-evaluated proposal and is otherwise equal to the best-evaluated proposal, and the Local business identified in (b) refuses to lower its proposal price, the same opportunity shall be afforded to the other qualifying Lansing-based businesses, in order of ascending price.

If no Lansing-based business agrees to the conditions described above, the contract shall be awarded to the person or business originally deemed the best-evaluated BIDDER.

19. SAFETY

Unless excepted in the Proposal, and accepted by the BWL, all BIDDERS will be required to comply with the BWL's Safety Manual. All BIDDERS should read and understand the BWL Safety Manual before submitting a Proposal. The BWL Safety Manual can be found on the BWL's website, <http://www.lbwl.com> by selecting first "Business Services" and then "Doing Business with BWL."

END OF INSTRUCTIONS TO BIDDERS

SCOPE OF WORK
Mid-Michigan Bulk Water Chemicals Consortium 2018

1. GENERAL

The Lansing Board of Water and Light (BWL) is soliciting proposals for a joint chemical contract. This contract is for one year, July 01, 2018 – June 30, 2019. The entities participating in this contract are as follows: BWL, City of Jackson, City of Ann Arbor, City of Lansing, City of Adrian, East Lansing – Meridian Water & Sewer Authority, City of East Lansing, and Delhi Township. All chemicals must conform to NSF standards for use in potable drinking water and meet all specifications listed in bid documents. Prices per ton of chemical are for delivery to any and all of the facilities listed in the proposal.

2. BOARD OF WATER AND LIGHT BACKGROUND

The Board of Water and Light was founded in 1885 and is the largest municipally owned electric utility in Michigan and among the 30 largest in the United States. An eight-member Board of Commissioners appointed by the mayor and confirmed by the Lansing City Council governs the BWL.

The Board employs approximately 700 bargaining and non-bargaining employees. The bargaining unit employees are represented by the International Brotherhood of Electrical workers (IBEW) local 352.

The Board owns and operates:

- (a) an electric system, which generates, purchases and distributes electric power and energy, and provides electric service to approximately 95,000 residential, commercial, and industrial customers in the greater Lansing, Michigan area;
- (b) water wells, a raw water transmission system, water conditioning facilities, and an extensive water distribution system serving potable water to approximately 55,000 residential, commercial, and industrial customers in the greater Lansing area;
- (c) steam generation boilers, a steam transmission and distribution system serving approximately 185 customers, and a chilled water facility and distribution piping system serving 16 customers in the city of Lansing.

The Board's total operating revenue for fiscal 2016 was \$360,935,415.

Additional BWL background and information may be viewed at www.lbwl.com.

3. DELIVERY AND BILLING ADDRESSES

The chemical is to be delivered and billed to the facilities and cities as listed below:

	<u>DELIVERY ADDRESS</u>	<u>BILLING ADDRESS</u>
LANSING BOARD OF WATER AND LIGHT	<p>Lansing Board of Water and Light Dye Water 148 S. Cedar St. Lansing, MI 48912-1139</p> <p>Deliveries: Mon-Fri 7:00 am – 2:00 pm. Call one hour in advance of delivery. P: 517-643-6621</p> <hr/> <p>Lansing Board of Water and Light Wise Rd. 5411 Wise Rd. Lansing, MI 48911-3409</p> <p>Deliveries: Mon-Fri 7:00 am – 12:00 pm. Call one hour in advance of delivery. P: 517-643-6621</p>	<p>Lansing Board of Water and Light Attn: Accounting Dept.- Accounts Payable P: 517-702-6186 E: crystal.jefferson@lbwl.com E: bwlinvoices@lbwl.com</p> <p>*Special note: BWL requires all invoices for chemicals to be emailed to us within 3 business days of delivery.</p>
CITY OF ANN ARBOR	<p>Ann Arbor Water Treatment Plant 919 Sunset Road Ann Arbor, MI 48103 Del Hours: 7am to 3pm</p> <hr/> <p>Ann Arbor Waste Water Treatment Plant 49 S. Dixboro Rd Ann Arbor, MI 48105 Del Hours: 8am to 5pm</p>	<p>City of Ann Arbor c/o Finance 301 East Huron St. PO Box 8647 Ann Arbor, MI 48107</p>
CITY OF JACKSON	<p>City of Jackson Water & Wastewater Treatment Plants 740 East Mansion St. Jackson, MI 49203</p> <hr/> <p>Wastewater Treatment Plant 2995 Lansing Ave. Jackson, MI 49201</p>	<p>City of Jackson, Michigan 161 W. Michigan Avenue Jackson, Michigan 49201</p>
CITY OF LANSING	<p>City of Lansing – Public Service Waste Water Division 1625 Sunset Ave Lansing, MI 48917</p> <p>Deliveries: Mon.-Fri. 7:00 am – 2:00 pm. No weekends or holidays unless prearranged or</p>	<p>City of Lansing – Public Service Waste Water Division 1625 Sunset Ave Lansing, MI 48917</p>

	emergency.	
CITY OF ADRIAN	<p>Adrian Water Treatment 815 Bent Oak Ave. Adrian MI 49221</p> <p>Deliveries: Mon. – Fri. 7:00am to 2:00pm. No weekends or holidays unless prearranged or emergency</p> <hr/> <p>1001 Oakwood Rd. Adrian, MI 49221</p>	<p>City of Adrian Utilities Attn: Accounting 135 E. Maumee St. Adrian, MI 49221</p>
EAST LANSING-MERIDIAN WATER & SEWER AUTHORITY	<p>2470 Burcham Dr. East Lansing, MI 48823</p>	<p>East Lansing-Meridian Water & Sewer Authority 2470 Burcham Drive East Lansing, MI 48823</p>
CITY OF EAST LANSING	<p>Water Resource Recovery Facility 1700 Trowbridge Road East Lansing, MI 48823</p> <hr/>	<p>Water Resource Recovery Facility 1700 Trowbridge Road East Lansing, MI 48823</p> <hr/>
OWOSSO	<p>Waste Water Treatment Plant 1410 Chippewa Trail Owosso, MI 48867</p> <p>Owosso Water Filtration Plant 1111 Allendale Ave Owosso, MI 48867</p>	<p>City of Owosso Attn: Accounts Payable – Rhonda Pritchett 301 W. Main St. Owosso, MI 48867</p>

4. ESTIMATED ANNUAL USAGES PER MUNICIPALITY

<u>MUNICIPALITY</u>	<u>CHEMICAL</u>	<u>ESTIMATED YEARLY USAGE</u>	<u>MINIMUM DELIVERY</u>
LANSING BOARD OF WATER AND LIGHT	SODIUM HYPOCHLORITE	225,000 gallons	4000-4800 gallon shipments required
	HYDROFLUOSILIC ACID	90 tons	30,000 and 40,000 lbs. shipments
	FERRIC CHLORIDE	48 ton	18 ton 2 – 3 times a year
	PEBBLE QUICKLIME	11,650 tons	1 or 2 50 ton deliveries a week

CITY OF JACKSON	SODIUM HYPOCHLORITE	73,000 gallons	5,000 gallons maximum
	HYDROFLUOSILIC ACID	55 tons	Self-unloading truck, 2,500 gallons required
	FERRIC ACID	60 tons	3,000 gal
	PEBBLE QUICKLIME	3,700 tons	50-100 ton loads (prefer 100 ton del)
CITY OF ANN ARBOR	SODIUM HYPOCHLORITE	850 tons	60,000 gal once per month
	HYDROFLUOSILIC ACID	68 tons	Delivery is 2-3 times per year
	FERRIC CHLORIDE	Dry: 105 Liquid: 48,000	3,000 gal min
	PEBBLE QUICKLIME	5,000 ton	Delivery 2-3 times per week
CITY OF LANSING	FERRIC CHLORIDE	468 dry tons	8,000 dry gallon shipments preferred
	SODIUM HYPOCHLORITE	80,000 gallons	4000-4800 gallon shipments required
	PEBBLE QUICKLIME	850 dry ton	10 deliveries a year
CITY OF ADRIAN	SODIUM HYPOCHLORITE	45,000 gallons	4,500 gallons every two months
	FERRIC CHLORIDE	66,000 liquid gallons	6,000 liquid gallons every five weeks
	HYDROFLUOSILIC ACID	14,000 lbs wet	Min delivery 2,000 gals –PRICE IN LBS ON INVOICE
	PEBBLE QUICKLIME	1,200 tons	40 ton dry
EAST LANSING-MERIDIAN WATER & SEWER AUTHORITY	SODIUM HYPOCHLORITE	60,000 gallons	4,000 gallons per delivery, every 2-3 weeks
	HYDROFLUOSILIC ACID	7 tons	2,500 gallons per delivery, about one per year
	FERRIC CHLORIDE	27 liquid tons	Self Unloading truck, 2,500 gal delivery
	PEBBLE QUICKLIME	2,100 tons	Pneumatic truck-load 1 per week
CITY OF EAST LANSING	FERRIC CHLORIDE	420 dry tons	8,000 gallons every two weeks
	SODIUM HYPOCHLORITE	45 wet tons	4,5000 gallons 1 or twice per year
OWOSSO	SODIUM HYPOCHLORITE	54,000 gal	4,500 gal per month
	FERRIC CHLORIDE	72,000 lbs	6,000 lbs Fe per month

	PEBBLE QUICKLIME	720 to 960 tons	60 to 80 tons per month. Max del of 55 tons can be accepted.
--	------------------	-----------------	--

5. CHEMICAL SPECIFICATIONS

NSF certification and MSDS shall accompany all orders and shipments. The Contractor/ Driver are responsible for appropriate hoses, adapters, and attachments to properly connect to unloading lines.

Sodium Hypochlorite

- Shall meet NSF Standard 60 and AWWA B300.
- Sodium Hypochlorite to be between 12% and 17% by weight.

Hydrofluosilic Acid

- Pricing is on an "as is" basis. Price shall stay the same regardless of the assay received.
- Must meet NSF Standard 60 and AWWA B703-00.
- Truck must be capable of maintaining 20 PSIG air pressure during unloading

Ferric Chloride

- Dry
 - Actual delivered solution to be 38% ferric chloride
 - Propose per dry ton price
- Liquid Ton
 - Ferric chloride shall be furnished as liquid ferric chloride with a density of 11 to 12 pounds per gallon. The ferric chloride content will be between 38.5% and 45.0% by weight. Bids are to be submitted on a basis of 100% ferric chloride.

Pebble Quick Lime

- Pebble quicklime shall meet all chemical specifications set forth in AWWA B202-93 unless otherwise specified.
- Water soluble calcium oxide content shall not be less than 90% as determined by the "Modified Scaife Method" as set forth in AWWA-202-88 (ASIM C25-58) Chemical Analysis of Lime
- Pebble Quicklime shall meet the following slaking test as detailed in AWWA 202-93:
 - Place 100 grams of sample from shipment in 400 ml of distilled water at 25°C temperature, stirring constantly for 3 minutes and read temperature. Temperature rise shall be a minimum of 40°C and all lime shall be slaked at the end of 10 minutes.
 - The lime shall not contain any organic or inorganic substances in quantities capable of producing deleterious effect upon the health of people drinking the water that has been treated with it.

- The purchase price of Calcium Oxide shall be based on 90% or greater available calcium oxide content. There shall be a reduction of 1 5% of the bid price for each 1.0%, or fraction thereof, deficiency of available calcium oxide content between 90% and 80%, and a 2.0% reduction for each 10%, or fraction thereof, deficiency of available calcium oxide content below 80% based on analysis done by the municipality's laboratory analysis using method AWWA 202-93.
- The vendor shall supply a sample of each load to the Operations Supervisor upon delivery. One-half of each sample will be retained for 30 days for inspection or analysis by the supplier. The municipality will notify the supplier within ten days of receipt of a shipment that does not meet specifications.

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium 2018

Note: This form may be completed using MS Word®

Provide the following business and contact information:

Legal Name: PVS Technologies, Inc.		Federal ID or Social Security Number: 38-1949201
Address: 10900 Harper Avenue		State of Incorporation Michigan
City: Detroit	State & Zip: Michigan 48213	Primary E-Mail: bids@pvschemicals.com
Type of Organization: <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> LLC <input type="checkbox"/> LLP <input type="checkbox"/> Sole Proprietor <input type="checkbox"/> Partnership <input type="checkbox"/> S-Corporation <input type="checkbox"/> Other (Explain)		
Office Phone: 313-571-1100	Alternate Office Phone: 800-337-7428	Office Fax: 313-571-6765
Primary Contact: Craig Mikkelsen	Contact Phone: 313-571-1100	Contact Fax: 313-571-6765
Contact Mobile:	Contact E-Mail: bids@pvschemicals.com	Website URL: www.pvschemicals.com

Provide responses to the following questions:

How many years has your firm been in business under the present ownership?	32 years
Have you done business with the Board of Water and Light? If so, furnish specifics.	Yes, since 2010
Have you done business with the City of Lansing? If so, furnish specifics.	Yes since 2010
Have you ever defaulted on a contract or been involved in litigation with the Board of Water and Light or the City of Lansing? If so, furnish specifics.	No
Have you ever defaulted on a contract or been involved in litigation or pending litigation or claims with any other client in the past five years? If so, furnish specifics.	No
List any relationships between your firm's staff and any current BWL employee.	None
Specify your background, training, experience, credentials and other factors which qualify you to perform the work described in the Scope of Work included in this Request for Proposal.	Manufacturer of Ferric and Ferrous Chloride for water/wastewater treatment processes and manufacturing.
List at least three (3) references for similar work you have performed for other clients. Include Client name, contact name, title and phone number.	See attached reference listing
List subcontractors that you plan to use on this project.	None
Indicate any exceptions to the enclosed General Requirements.	None
Include any additional information you may deem helpful in evaluating your proposal.	SDS and NSF Certification attached.

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium 2018

The undersigned Bidder hereby acknowledges receipt of the following addenda:

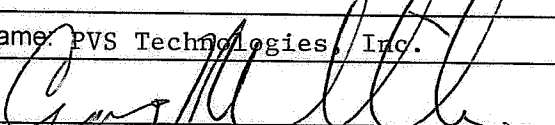
Addendum No.	Date	Enter addenda numbers and received dates if applicable
<i>none</i>		

Provide pricing:

Activity	Unit Pricing
Sodium Hypochlorite	
Chemical:	\$ <u>No bid</u> / gal
Demurrage:	\$ <u>No bid</u> / hour *first 4 hours free
Hydrofluosilic Acid	
Chemical in minimum 40,000 lbs. shipments:	\$ <u>No bid</u> / ton
Chemical in minimum 30,000 lbs. shipments:	\$ <u>No bid</u> / ton
Chemical split between Dye and Wise Plants minimum 40,000 lbs. shipments:	\$ <u>No bid</u> / ton
Demurrage:	\$ <u>No bid</u> / hour *first 4 hours free
Ferric Chloride	
Dry Chemical:	\$ <u>414.00</u> / ton (dry ton)
Liquid Chemical:	\$ <u>157.32</u> / ton (liquid ton)
Demurrage:	\$ <u>95.00</u> / hour *first 4 hours free
Pebble Quick Lime	
Chemical:	\$ <u>No bid</u> / ton
Demurrage:	\$ <u>No bid</u> / hour *first 4 hours free

The undersigned Bidder states that this proposal is made in conformity with the Proposal Documents and agrees that, in the event of any discrepancies or differences between any conditions of their proposal and the Proposal Documents, the provisions of the latter shall prevail. No verbal or written agreements or understandings considered or entered into prior to signing of a contract in the form of a purchase order, shall be binding after the signing of the contract unless incorporated in the contract.

The undersigned Bidder certifies that this proposal is made in good faith, without collusion or connection with any other person or persons submitting proposals for the work.

Company Name:	<i>PVS Technologies, Inc.</i>
Signature:	

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium 2018

Name:	Craig Mikkelsen
Title:	Vice President of Sales & Marketing
Date:	March 19th, 2018

END OF PROPOSAL FORM

TERMS AND CONDITIONS FOR WATER CHEMICALS

General Requirements may be individually modified or superseded by PURCHASER Supplemental Requirements. In case of conflicts, the PURCHASER Supplemental Requirements shall govern.

1. DEFINITIONS

All terms and conditions of the Seller most recent Permit application shall remain in effect except as may be modified herein.

2. TERM

The following meanings are ascribed to the terms used in these General Requirements:

PURCHASER – means the City of Lansing, by its Board of Water and Light.

Consortium – means Mid-Michigan Drinking Water Consortium, consisting of the City of Lansing, by its Board of Water and Light, City of Jackson Water and Wastewater, City of Adrian, Ann Arbor Drinking Water Treatment Plant, East Lansing-Meridian Water and Sewer Authority, Delhi Charter Township, and Delta Township.

Contract Documents – means the PURCHASER's solicitation, including the invitation to bid or request for proposal or quotation, instructions to bidders/offerors, SELLER'S response to the solicitation, PURCHASER drawings, the specifications, any addenda or supplements including Change Orders, the purchase order, these General Requirements, and Supplemental Requirements.

SELLER– means the individual, partnership, corporation or other entity awarded a purchase order by the PURCHASER.

Day – means a calendar day.

Designated Representative – means the General Manager of the PURCHASER, or authorized designee. Designated Representative shall be the individual designated to receive submissions and notices from SELLER and to represent the PURCHASER in the performance of the Contract. Any interaction with another division of the PURCHASER shall be coordinated through the Designated Representative.

Participants – means entities part of Mid-Michigan Drinking Water Consortium.

Work – means the products and services to be furnished under the Contract Documents. Work includes and is the result of performing services, transporting chemicals, and furnishing chemicals.

3. TERMS

A. QUALITY

- (1) Chemicals shall meet all criteria identified in the Specifications.
- (2) The PURCHASER reserves the right to reject all chemicals that fail to meet those criteria.
- (3) Chemicals that fail to meet those criteria that have been delivered to the PURCHASER must be removed by the SELLER at SELLER's expense.

B. CHEMICALS FURNISHED BY SELLER

- (1) The SELLER shall arrange and pay all charges for the proper delivery, receipt, rigging, unloading, and storage of all chemicals requested by the PURCHASER. The place of delivery is the PURCHASER's place of business. The PURCHASER will provide an area for storage of the material at its delivery site. SELLER must supply a sufficient number of individuals to promptly unload and store chemicals. SELLER continues to bear all responsibility for care, custody, control and protection of the chemicals until the chemicals are properly stored. After storage, SELLER retains responsibility only for the quality of the chemicals.

- (2) The SELLER shall notify the PURCHASER's Representative when any material is ready for shipment. Before arranging for any shipment, SELLER must ensure that the delivery will not cause undue blocking at the delivery site.
- (3) SELLER shall supply the manufacturer's name and catalog number for each item, if applicable.
- (4) PURCHASER's Designated Representative must coordinate shipment to the site.
- (5) If requested by the PURCHASER's Designated Representative, SELLER shall furnish copies of bills of lading, shipping manifests, and other papers showing shipment of chemicals and/or reports of their receipt.
- (6) SELLER shall show the PURCHASER's purchase order number and release number on all shipments, packing lists, and invoices. Shipments may be refused without this information.
- (7) All chemicals shall be new and from a reputable manufacturer currently engaged in the production of like chemicals.

4. PERMITS

SELLER shall obtain all permits necessary to transport and deliver chemicals to the PURCHASER. The PURCHASER shall obtain any necessary permit to store the chemicals on its properties.

5. PRICE

All prices shall be a firm delivered price for the term of the contract, unless specified in SELLER's proposal or bid and accepted by the PURCHASER before award. Prices shall include any fuel surcharge.

The PURCHASER shall solely be financially responsible for such material it procures on its own behalf and through its own bilateral contracts under the proposal of this agreement. The PURCHASER shall not in any shape or form be financially responsible for any procured material obtained from contracts by any other Participant(s) of Consortium.

6. SAFETY

- (1) SELLER shall proceed with the Work in a manner dictated by all applicable federal and state safety regulations, the PURCHASER Safety Manual, and safe practice, using chemicals, tools and rigging of a safe character. The current version of the PURCHASER's Safety Manual can be found at http://www.lbw.com/uploadedFiles/MainSite/Content/Doing_Business/BWL_Safety_Manual.pdf. SELLER shall strictly comply with these laws, rules and regulations including, but not limited to, OSHA and MIOSHA requirements, including without limitation MIOSHA "Right to Know" obligations, MCL 408.1001 et seq., and shall provide documented evidence of that compliance upon the Designated Representative's request.
- (2) SELLER shall provide and use all protective devices to permit safe working conditions for SELLER's employees and to prevent hazards to employees of other Seller, the PURCHASER and its employees, or the public.
- (3) While on PURCHASER property, SELLER's personnel shall wear appropriate personal protection equipment.
- (4) If, in the PURCHASER's opinion, SELLER is not proceeding with its Work in a safe manner or in accordance with federal, state, or PURCHASER safety regulations, the PURCHASER may issue a Seller Safety Violation Notice or otherwise stop the Work and direct the SELLER to rectify the unsafe conditions immediately. If SELLER fails to promptly rectify the situation, the PURCHASER may proceed to rectify the unsafe conditions at SELLER'S expense. Compliance with this paragraph shall effect neither the Contract price nor the schedule. SELLER shall comply with all PURCHASER'S, OSHA, and MIOSHA confined space requirements and procedures, including PURCHASER permitting requirements.

7. INSURANCE

- (1) At its own expense, SELLER shall acquire and continue in effect for the term of the Contract, insurance providing the following coverage(s):
 - (a) Commercial General Liability Insurance on an occurrence basis. This coverage shall include Personal Injury, Contractual Liability, and Products/Completed Operations insurance. The limit of liability shall be at least \$1,000,000 combined single limit for bodily injury and property damage. There shall be no exclusion for work within any distance of railroad property.
 - (b) Automobile liability insurance that complies with the requirements of the Michigan No-fault law with residual liability limit of at least \$1,000,000 combined single limit for bodily injury and property damage. There shall be coverage for owned, hired, and non-owned vehicles.
 - (c) Worker's compensation insurance as required by Michigan law.

- (2) SELLER shall purchase insurance from companies acceptable to the PURCHASER. Generally, a company rated A- or better by A.M. Best and domiciled in the United States will be acceptable to the PURCHASER. The A.M. Best website can be found at: <http://www.ambest.com/>.
- (3) Certificates of insurance shall state that they will not be canceled nor any changes made, which alters, restricts or reduces the insurance provided or changes the name of the insured, without first giving thirty (30) days' notice in writing to the Corporate Secretary, PURCHASER, 1232 Haco Dr., P.O. Box 13007, Lansing, Michigan 48901.

8. INDEMNITY

SELLER shall, to the fullest extent allowed by law, defend, indemnify, and hold harmless the PURCHASER, the City of Lansing, their respective officers, agents, employees and insurers against any liability, loss, damage, demand, governmental action, citation, cause of action, or expense of whatever nature (including costs of defense, settlement, court costs and attorney's fees) which may result from any loss, injury, death, or damage (including environmental harm) allegedly sustained by any person, firm, corporation, or other entity, which arises out of or is caused by any act or omission of SELLER its officers, agents, or employees in connection with or in any way arising out of this Contract. SELLER's obligations under this paragraph shall survive the expiration or termination of this Contract.

9. REMEDIES

If SELLER fails or refuses to substantially perform according to the terms of this Contract, SELLER shall be declared to be in default by the PURCHASER by a written notice and shall be given an opportunity to perform in accordance with the notice. If the default has not been corrected or begun to be corrected within the time specified in the notice, or the SELLER has ceased to pursue the correction with due diligence, the PURCHASER may elect to (a) "cover" by purchasing the chemicals from another responsible vendor at the lowest cost available to the PURCHASER, and passing any additional cost on to the SELLER, who must pay the additional costs within 30 days of invoice receipt; (b) terminate the agreement and seek damages, or (c) treat the agreement as continuing and require specific performance, or (d) avail itself of any other remedy at law or equity.

If the PURCHASER fails or refuses to substantially perform according to the terms of this Contract, the PURCHASER shall be declared to be in default by the SELLER by a written notice and shall be given an opportunity to perform in accordance with the notice. If the default has not been corrected or begun to be corrected within the time specified in the notice, or the PURCHASER has ceased to pursue the correction with due diligence, the SELLER may elect to (a) terminate the agreement and seek damages, or (b) treat the agreement as continuing and require specific performance, or (c) avail itself of any other remedy at law or equity.

10. PLANT PROTECTION AND SECURITY

- (1) If the Work requires SELLER'S employees to enter a protected or policed area of the PURCHASER, including all utility operating areas, the SELLER shall arrange, in conjunction with PURCHASER security, for visible identification badges for all SELLER personnel employed on such Work. SELLER's trucks or common carriers entering PURCHASER property are subject to inspection.
- (2) SELLER, its employees, or suppliers, shall observe traffic rules, speed regulations, or other safety rules in the operation of its vehicles and equipment on PURCHASER property, as established by PURCHASER.
- (3) SELLER's employees shall comply with the PURCHASER's "Weapons in the Workplace" policy and "Prevention of Violence in the Workplace" policy.

11. TIME AND MANNER OF PERFORMANCE

- (1) The PURCHASER's Designated Representative shall contact SELLER when a shipment of chemicals is needed. The SELLER shall deliver the chemicals within 21 days to the PURCHASER location identified by the PURCHASER's Designated Representative, unless a shorter time is specified in the bid/proposal documents. In some cases, a shipment may be split between two PURCHASER locations.
- (2) SELLER shall keep a sufficient quantity of chemicals on hand to meet the PURCHASER's demands, in accordance with the Specifications.
- (3) Any activities occurring on PURCHASER property shall be performed from 8 a.m. through 5 p.m., Monday through Friday, excluding PURCHASER holidays. If SELLER wishes to perform Work on PURCHASER property during other times, SELLER must receive express written permission from the Designated Representative.

12. REPORTING

SELLER shall provide quarterly reports to the PURCHASER, including sales per month, order fulfillment percentage, backorder reports, on time delivery tracking, and other information requested by the PURCHASER.

13. DELAY

- (1) Time is of the essence in the execution of the Work.
- (2) If SELLER fails to deliver the chemicals within 21 days after demand, or shorter time specified in the bid/proposal documents, and the delay is not caused by the PURCHASER or its agent, SELLER shall pay the PURCHASER's direct costs caused by the delay, including the need to "cover" by purchasing chemicals from another vendor, if applicable. The PURCHASER may elect to waive this penalty, in writing, by permitting a back-order of up to fourteen days past the expected delivery date.

13. GOVERNING LAW AND VENUE

- (1) The Contract Documents shall be interpreted in accordance with the laws of the State of Michigan, without regard to conflict of laws provisions.
- (2) Venue shall be in Ingham County, Michigan.

14. FORCE MAJEURE

Neither the PURCHASER nor SELLER shall be held responsible for any delay or default caused by fire, act of God, riot, terrorist act, other violent act, war, or flood where such cause was beyond the delaying or defaulting party's reasonable control. However, SELLER shall make all reasonable efforts to remove or eliminate such a cause of delay or default and shall, upon the cessation of the cause, diligently pursue performance or its obligation under this Contract. SELLER'S management of its plant operations and compliance with regulations, even if they impact SELLER'S ability to meet the contract requirements, do not constitute force majeure.

15. RIGHT TO AUDIT RECORDS

The PURCHASER shall be entitled to audit the books and records of a SELLER or under any PURCHASER contract or subcontract to the extent that such books, documents, papers and records are pertinent to the performance of such contract or subcontract. The SELLER shall maintain such books and records for a period of three years from the date of final payment under the prime contract for a period of three years from the date of final payment under the subcontract.

16. NONDISCRIMINATION

SELLER agrees not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, creed, religion, national origin, sex, disability, age, height, weight, veteran status, marital status, or any other reason prohibited by law. A breach of this covenant shall be considered a material breach of contract.

17. INDEPENDENT SELLER

SELLER shall be, for all purposes, an independent SELLER and not an employee or agent of the PURCHASER. SELLER shall not hold itself out as an agent of the PURCHASER or the City of Lansing.

SELLER acknowledges that PARTICIPANTS are, for all purposes, independent SELLER(S) and not an employee or agent of the PURCHASER or the City of Lansing.

18. TERMINATION FOR CONVENIENCE

The PURCHASER may also terminate this Contract for its own convenience upon thirty days written notice. If the PURCHASER terminates for convenience, however, it shall compensate SELLER for all Specification-conforming chemicals delivered to the PURCHASER.

19. CONTRACT

The final versions of the Contract Documents, taken as a whole, constitute the sole and final agreement between the parties (Contract), which can only be modified by a written document properly executed by both parties.

20. LOADING/UNLOADING

Prior to offloading any chemical, the facility personnel shall:

- Verify the Bill of Lading for the correct chemical and correct PURCHASER delivery address.
- Assure that the material is being off loaded into the correct bulk tank.
- Determine the available tank volume is sufficient for the incoming delivery.
- Require that the driver remain in line of sight of the delivery hose and bulk tank connection at all times.
- Require that the driver have the appropriate facility personal protective equipment, including but not limited to hardhat, steel toed shoes, chemical safety goggles, etc.
- Require that the driver have appropriate spill response supplies and that any storm drains in the immediate area will be protected with appropriate "drain blocker" mats or plugs prior to starting the off-loading process.

Immediately report to management any problems with driver actions, PURCHASER tank fill connections, fill valve containment, tank level indicators, secondary containment, or any other safety or environmental concern.

SWORN AND NOTARIZED AFFIDAVIT OF COMPLIANCE

IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

All bidders must submit the following certification statement in compliance with Public Act No. 517 of 2012 (the "Iran Economic Sanctions Act") and attach this form to the bid. **The Lansing Board of Water & Light shall not accept any bid that does not include this sworn and notarized certification of statement.**

The undersigned, the owner or authorized officer of PVS Technologies, Inc. (the Bidder), pursuant to the compliance certification requirement provided in the Lansing Board of Water & Light Request for Proposal, hereby certifies, represents and warrants that the Bidder (including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, and that in the event the Bidder is awarded a contract as a result of the aforementioned Request for Proposal, the Bidder will not become an "Iran linked business" at any time during the course of performing the work or any services under the contract.

The Bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification is made, whichever is greater, the cost of the Lansing Board of Water & Light's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a Request for Proposal for three (3) years from the date it is determined that the person has submitted the false certification.

BIDDER

PVS Technologies, Inc. / Craig Mikkelsen

By: Craig Mikkelsen

Its: Vice President of Sales & Marketing

Date: March 19th, 2018

STATE OF Michigan

COUNTY OF Wayne

This instrument was acknowledged before me on the 19th day of March, 2018, by
Eileen McDonnell

Eileen McDonnell

Eileen McDonnell

Eileen McDonnell, Notary Public

Wayne County, Michigan

My Commission Expires: 12/23/2020

Acting in the County of: Wayne

EILEEN MCDONNELL
Notary Public, State of Michigan
Wayne County, Michigan
My Commission Expires Dec 23, 2020
Acting in Wayne County

**CERTIFIED COPY OF RESOLUTIONS
OF BOARD OF DIRECTORS
OF PVS TECHNOLOGIES, INC.**

The undersigned, being the Assistant Secretary of PVS Technologies, Inc. (the "Company"), a Michigan corporation, certifies that the following is an accurate and complete copy of resolutions duly adopted by the Board of Directors of the Company, and that said resolutions remain in full force and effect as of the date of this certificate:

"RESOLVED, That the Company is authorized to submit bids to private and governmental entities for the sale of products and for the performance of services (collectively, 'Bids').

RESOLVED, That the Company is authorized to enter into contracts with private and governmental entities for the sale and purchase of products and for the performance of services (collectively, 'Contracts').

FURTHER RESOLVED, That the Company is authorized to submit applications for permits, licenses and other grants of authority from governmental entities which the Company requires to conduct its business (collectively, 'Applications').

FURTHER RESOLVED, That Craig L. Mikkelson, Vice President of Sales & Marketing of the Company, shall be and is authorized to execute Bids, Contracts and Applications on behalf of the Company and such other documents relating to Bids, Contracts and Applications as he deems necessary or expedient for the purposes of carrying out the terms of the Bids, Contracts and Applications or otherwise conducting the business of the Company."

IN WITNESS OF THESE CERTIFIED RESOLUTIONS, the undersigned has signed below and affixed the corporate seal of the Company on September 25, 2017.



James B. DeVleeschouwer, Asst. Secretary

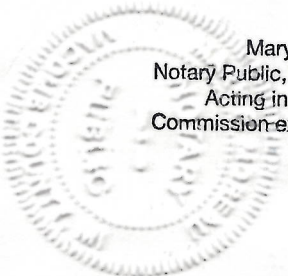
Subscribed and sworn to before me
on September 25, 2017.



Notary Public, Wayne County, Michigan

My Commission Expires: 3/2/2018

Mary P. Moreau
Notary Public, Macomb County, MI
Acting in Wayne County
Commission expires March 2, 2018





Safety Data Sheet

Revision Date Mar-15-2015

Item # 10244

Safety Data Sheet 0235

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name
UN/ID No.
Synonyms
Recommended Use
Uses advised against

Ferric Chloride Solution DWG Grade
UN2582
Iron (III) Chloride, Iron trichloride, FeCl₃
Water treatment chemical
Consumer uses: Private households (= general public = consumers).

CONTROLLED
IF STAMPE

Company Name
PVS Technologies, Inc.
10900 Harper Ave.
Detroit, MI 48213
(313) 571-1100

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Oral

Skin corrosion/irritation

Serious eye damage/eye irritation

Category 4

Category 1

Category 1

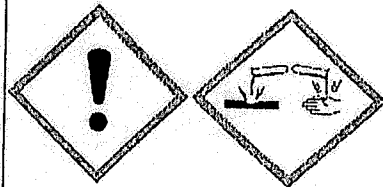
Emergency Overview

DANGER

Hazard statements

Physical hazards

Causes severe skin burns and eye damage
Harmful if swallowed
Corrosive
May be corrosive to metals



Precautionary statements

Prevention

Response

Storage

Disposal

- Wear eye/face protection
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash face, hands and any exposed skin thoroughly after handling
- Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see section 4 on this Safety Data Sheet)
- Store in a secure area
- Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

None known.

Other Information

Other hazards

- Toxic to aquatic life with long lasting effects
- Toxic to aquatic life

Unknown Acute Toxicity

0.85% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-% *
Water	7732-18-5	231-791-2	55-69
Iron trichloride	7705-08-0	231-729-4	31-45
Hydrogen chloride	7647-01-0	231-595-7	0.0-1.0
Ferrous chloride	7758-94-3	231-843-4	0.0-0.7

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

- General advice**
- Immediate medical attention is required
- Eye contact**
- Immediate medical attention is required
 - Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
 - Do not rub affected area
- Skin Contact**
- Immediate medical attention is required
 - Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes
 - Wash contaminated clothing before reuse
- Inhalation**
- Call a physician or poison control center immediately
 - Remove to fresh air
 - If not breathing, give artificial respiration
 - If breathing is difficult, give oxygen
- Ingestion**
- Call a physician or poison control center immediately
 - Do NOT induce vomiting
 - Rinse mouth
 - Drink 4 to 8 ounces (120-240 ml) of water or milk as soon as possible after ingestion.
 - Never give anything by mouth to an unconscious person
- Note to physician**
- Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.
- Self-protection for first aid personnel**
- Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media**
- Dry chemical, CO₂, water spray or alcohol-resistant foam
 - Use extinguishing measures that are appropriate to local circumstances and the surrounding environment
- Unsuitable extinguishing media**
- Caution: Use of water spray when fighting fire may be inefficient
 - Do not use a solid water stream as it may scatter and spread fire
- Specific hazards arising from the chemical**
- The product causes burns of eyes, skin and mucous membranes
 - Thermal decomposition can lead to release of irritating and toxic gases and vapors
 - In the event of fire and/or explosion, do not breathe fumes

Item # 10244 Ferric Chloride Solution DWG Grade

Protective equipment and precautions for firefighters

- Wear a self-contained breathing apparatus and chemical protective clothing

Flammable properties
Explosive properties

- No information available
- No information available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

- Evacuate personnel to safe areas
- Use personal protective equipment as required
- Avoid contact with skin, eyes or clothing
- Keep people away from and upwind of spill/leak

Environmental precautions

- For small spills, absorb material with clay absorbent or other compatible material. Dispose of the waste material according to local, state and governmental requirements.
- For large spills, contain the material using barriers of absorbent pigs, clay absorbent or earth dams.
- US regulations require reporting spills of this material that could reach any surface waters. The toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802

Methods for cleaning up

- Neutralize with soda ash or lime
- Take up mechanically, placing in appropriate containers for disposal
- Clean contaminated surface thoroughly
- Soak up with inert absorbent material

Other Information

- Spills exceeding the Reportable Quantity (RQ) of 1000 pounds or more must be reported to the National Response Center, (800) 424-8802.

7. HANDLING AND STORAGE

Advice on safe handling

- Use personal protective equipment as required
- Avoid contact with skin, eyes or clothing
- Ensure adequate ventilation, especially in confined areas
- In case of insufficient ventilation, wear suitable respiratory equipment
- Use only with adequate ventilation and in closed systems

Storage Conditions

- Keep container tightly closed in a dry and well-ventilated place
- Keep out of the reach of children
- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep in properly labeled containers

Incompatible materials

Incompatible with strong acids and bases, oxidizers, steel, and most metals

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m ³ Fe	-	TWA: 1 mg/m ³ Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m ³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m ³
Ferrous chloride 7758-94-3	TWA: 1 mg/m ³ Fe	(vacated) TWA: 1 mg/m ³ Fe	TWA: 1 mg/m ³ Fe

Exposure Guidelines

Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Respiratory protection

- A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

Item # 10244 Ferric Chloride Solution DWG Grade

Eye/Face protection	<ul style="list-style-type: none"> • Tight sealing safety goggles • Face protection shield
Skin and body protection	<ul style="list-style-type: none"> • Wear suitable protective clothing • Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact
General Hygiene Considerations	<ul style="list-style-type: none"> • Do not eat, drink or smoke when using this product • Wash contaminated clothing before reuse • Contaminated work clothing should not be allowed out of the workplace • Regular cleaning of equipment, work area and clothing is recommended • Avoid contact with skin, eyes or clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear to slightly hazy
Color	Red brown
Odor	Slight Iron acidic
Odor threshold	No information available

Property	Values	Remarks • Method
pH	<2	
Melting point/Freezing Point	-26 °C / -15 °F	
Boiling point / boiling range	110 °C / 230 °F	
Flash point	No information available	
Evaporation rate	<1	
Flammability (solid, gas)	No information available	n-Butyl acetate =1
Flammability Limit in Air		Not flammable
Upper flammability limit (%)	No information available	
Lower flammability limit (%)	No information available	
Vapor pressure	No information available	
Vapor density	No information available	negligible
Specific Gravity	1.40	
Water solubility	Miscible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point °C	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	No information available
Bulk density	11.7 Pounds per gallon (lb/gal), Typical

10. STABILITY AND REACTIVITY

Stability	<ul style="list-style-type: none"> • Stable under recommended storage conditions
Conditions to avoid	<ul style="list-style-type: none"> • Exposure to air or moisture over prolonged periods
Incompatible materials	<ul style="list-style-type: none"> • Incompatible with strong acids and bases, oxidizers, steel, and most metals

Item # 10244 Ferric Chloride Solution DWG Grade

Hazardous Decomposition Products • Thermal decomposition can lead to release of irritating and toxic gases and vapors

Possibility of Hazardous Reactions • None under normal processing and storage

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principle Routes of Exposure

Inhalation
Ingestion
Skin Contact
Eye contact

Inhalation Skin Contact Eye contact

May cause irritation of respiratory tract. Avoid breathing vapors or mists.

May cause adverse kidney effects. May cause adverse liver effects.

Contact causes severe skin irritation and possible burns.

Corrosive to the eyes and may cause severe damage including blindness.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron trichloride 7705-08-0	= 450 mg/kg (Rat)	>2000 mg/kg (rat)	-
Hydrogen chloride 7647-01-0	= 700 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 3124 ppm (Rat) 1 h
Ferrous chloride 7758-94-3	450	-	-

Information on toxicological effects

Symptoms

Vomiting, Hypoxemia (reduced O2 in the blood), Metabolic Acidosis

Delayed and Immediate effects as well as chronic effects from short and long-term exposure

Sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Hydrogen chloride 7647-01-0	-	Group 3	-	-

Reproductive toxicity

No information available.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Chronic toxicity

Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects. May cause adverse liver effects. Eyes, Gastrointestinal tract (GI), Liver, Respiratory system, Skin.

Target Organ Effects

Aspiration hazard

No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity

0.85% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document . mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity

Toxic to aquatic life with long lasting effects

0.85% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Iron trichloride 7705-08-0	-	20.95 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 Static

Persistence and degradability

No information available.

Bioaccumulation

No Information available

Item # 10244 Ferric Chloride Solution DWG Grade

Chemical Name	Partition coefficient
Iron trichloride 7705-08-0	-4

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Disposal of wastes • This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261)
Contaminated packaging • Do not reuse container
US EPA Waste Number • D002

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Iron trichloride 7705-08-0	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

Proper shipping name FERRIC CHLORIDE, SOLUTION
Hazard Class 8
UN/ID No. UN2582
Packing Group III
RQ (lbs)(dry) 1000
RQ as ls (lbs)(wet) 2222 (45% Ferric Chloride)
Description UN2582, Ferric chloride, solution, 8, III
Special Provisions B15, IB3, T4, TP1
Emergency Response Guide Number 154

IATA

UN/ID No. UN2582
Proper shipping name FERRIC CHLORIDE SOLUTION
Hazard Class 8
Packing Group III
ERG Code 8L
Special Provisions A3

IMDG

UN/ID No. UN2582
Proper shipping name FERRIC CHLORIDE, SOLUTION
Hazard Class 8
Packing Group III
EmS-No. F-A, S-B
Special Provisions 223

15. REGULATORY INFORMATION

US Federal Regulations

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Item # 10244 Ferric Chloride Solution DWG Grade

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Iron trichloride 7705-08-0	1000 lb	-	-	X
Hydrogen chloride 7647-01-0	5000 lb	-	-	X
Ferrous chloride 7758-94-3	100 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	RQ (lbs)(dry)
Iron trichloride 7705-08-0	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Hydrogen chloride 7647-01-0	5000 lb	5000 lb	RQ 5000 lb final RQ RQ 2270 kg final RQ
Ferrous chloride 7758-94-3	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Iron trichloride 7705-08-0	X	X	X
Ferrous chloride 7758-94-3	X	X	X

Chemical Name	U.S. - DEA - List I or Precursor Chemicals	U.S. - DEA - List II or Essential Chemicals
Hydrogen chloride 7647-01-0	-	50 gallon, Export Volume 27 kg, Export Weight 0 kg, Domestic Sales Weight

International Inventories

TSCA	Complies
DSL/NDL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 ENCS - Japan Existing and New Chemical Substances
 IECSC - China Inventory of Existing Chemical Substances
 KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances

16. OTHER INFORMATION

Item # 10244 Ferric Chloride Solution DWG Grade

<u>NFPA</u>	Health hazards 3	Flammability 0	Instability 0	Physical and Chemical Properties -
<u>HMIS</u>	Health hazards 3	Flammability 0	Physical hazards 0	Personal protection D

Item #	10244
Safety Data Sheet	0235
Revision Date	Mar-15-2015
Issue Date	Mar-15-2015
Version	1
Revision Note	*** Updated value on SDS.

Disclaimer

All information, statements, data, advice, and/or recommendations, including, without limitation, those relating to storage, loading/unloading, piping, and transportation (collectively referred to herein as "Information") are believed to be accurate, reliable, and based on reliable industry and regulatory references. However, no representation or warranty, express or implied, is made as to its completeness, accuracy, fitness for a particular purpose or any other matter, including, without limitation, that the practice or application of any such information is free of patent infringement or other intellectual property misappropriation. The Company providing this SDS is not engaged in the business of providing technical, operational, engineering, or safety information for a fee, and therefore, any such information provided herein has been furnished as an accommodation and without charge. All information provided herein is intended for use by persons having requisite knowledge, skill, and experience in the chemical industry. The Company providing this SDS shall not be responsible or liable for the use, application, or implementation of the information provided herein, and all such information is to be used at the risk, and in the sole judgment and discretion of such persons, their employees, advisors, and agents. This safety data sheet (SDS) is offered for your information, consideration, and investigation as required by federal hazardous products act and related legislation.

End of Safety Data Sheet



Liquid Ferric Chloride – Drinking Water Grade

PVS Technologies Liquid Ferric Chloride is a concentrated solution of Iron III Chloride (FeCl_3) in water. It is manufactured from 100% high purity raw materials.

Principal Uses

Potable Water Treatment

- Turbidity reduction
- Color elimination
- Enhanced coagulation, NOM and DBP precursor removal
- Softening solids sedimentation
- Lead control through a wide pH application range
- Sludge reduction
- Filter conditioning
- Arsenic Removal

Wastewater Treatment

- Phosphate precipitation and removal
- Enhanced sedimentation
- Dewatering of all types of sludge streams
- Polymer flocculant enhancement
- Sulfide based odor elimination
- Struvite control

<i>Specifications</i>	
Appearance:	A dark red/brown liquid
Concentrations:	
FeCl_3	37% - 42%
FeCl_2	0.75% maximum
Free Acid as HCl	1.0% maximum Drinking Water Grade
Insolubles	0.008% (80 ppm) maximum
Radionuclides	None
Specific gravity:	1.38 – 1.49
Viscosity:	12.1 centipoises for a 40% solution
Crystallization:	37% FeCl_3 (- 15°F); 40% FeCl_3 (10°F)
AWWA Certification:	B407-12
ANSI/NSF Standard 60 Certification:	Maximum use level – 250 ppm as solution
CAS No.:	7705-08-0
UN Classification:	UN2582, Ferric Chloride Solution
	SQC data available on request



Delivery

This product is available for shipping via the following options:

- 55 gallon drums
- 300 gallon totes
- 4,000 & 8,000 gallon tank trucks
- 17,000 gallon railcars

Product Availability

Throughout North America – 8,000 gallon tankers only available in Michigan.

Handling & Safety

Ferric Chloride is considered to be hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200) and should be handled in a manner that is consistent with acceptable practices. Please obtain the Ferric Chloride Safety Data Sheet for complete up-to-date information.

Under normal situations the only protective equipment required in the use and handling of Liquid Ferric Chloride are splash proof chemical goggles and rubber gloves. Liquid Ferric Chloride will stain both clothing and skin and it is recommended that, to protect against this occurrence, other protect clothing be worn as is appropriate.

Ferric Chloride reacts with many metals. However, most handling situations are reliably addressed through the use of common plastic materials such as FRP, PVC, Polyethylene, Polypropylene and Teflon. For additional information, please consult your equipment supplier.

For additional information call: 313 571-1100
To place an order call: 800 337-7428

PVS Technologies - Serving Water and Wastewater Plants throughout the World

This bulletin and the information contained herein are offered solely for your consideration, investigation and verification. NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OTHERWISE, ARE MADE OR CONTAINED HEREIN. PVS Technologies' exclusive responsibility for any claims, including claims based on negligence, arising in connection with the information contained herein or the subsequent purchase, use, storage or handling of the product will in no event exceed PVS Technologies' sale price for the product with respect to which damages are claimed. In no event will PVS Technologies be liable for any incidental or consequential damages arising in connection with the information contained herein or the subsequent purchase, use, storage or handling of the product. User accepts full responsibility for compliance with all applicable Federal, State and Local laws and regulations. Nothing contained herein will be construed to constitute permission or a recommendation to use the product in any process or formulation covered by a patent a patent application owned by PVS Technologies or by others.

Document Number: TAFU017	Page 2 of 2	Revision No.: 2	Revision Date: 08/16/2016
-----------------------------	-------------	--------------------	------------------------------



The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Friday, January 26, 2018** at 12:15 a.m. Eastern Time. Please contact NSF International to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:

<http://info.nsf.org/Certified/PwsChemicals/Listings.asp?Company=3U690&Standard=060&>

NSF/ANSI 60 Drinking Water Treatment Chemicals - Health Effects

PVS Technologies

10900 Harper Avenue

Detroit, MI 48213

United States

313-571-1100

Visit this company's website

(<http://www.pvschemicals.com>)

Facility : Decatur, AL

Ferrous Chloride[1]

Trade Designation

Product Function

Max Use

Ferrous Chloride, Solution

Other

250mg/L

Liquid Ferrous Chloride

Other

250mg/L

Liquid Ferrous Chloride- DWG

Other

250mg/L

[1] This product may be used for chlorite removal.

NOTE: Only products bearing the NSF Mark on the product, product packaging, and/or documentation shipped with the product are Certified.

Facility : Trinity, AL**Ferrous Chloride[1]**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride- DWG	Coagulation & Flocculation	250mg/L

[1] This product may be used for chlorite removal.

NOTE: Only products bearing the NSF Mark on the product, product packaging, and/or documentation shipped with the product are Certified.

Facility : Distribution Center - Henderson, CO**Ferric Chloride**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Augusta, GA

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution

Coagulation & Flocculation

250mg/L

LFC

Coagulation & Flocculation

250mg/L

LFC-DWG

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride Drinking Water Grade (DWG)

Coagulation & Flocculation

250mg/L

Facility : Distribution Center - Chicago, IL

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride - DWG

Coagulation & Flocculation

250mg/L

Facility : Distribution Center - East St. Louis, IL

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride

Coagulation & Flocculation

250mg/L

Liquid Ferric Chloride - DWG

Coagulation & Flocculation

250mg/L

Ferrous Chloride

Trade Designation

Product Function

Max Use

Ferrous Chloride

Coagulation & Flocculation

250mg/L

Ferrous Chloride, Solution

Coagulation & Flocculation

250mg/L

Liquid Ferrous Chloride

Coagulation & Flocculation

250mg/L

NOTE: Only products bearing the NSF Mark are NSF Certified.

Facility : Distribution Center - Louisville, KY

Ferric Chloride

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride DWG	Coagulation & Flocculation	125mg/L
Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	125mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	125mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	125mg/L

Facility : Distribution Center - 2 Baltimore, MD

Ferric Chloride

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride-DWG	Coagulation & Flocculation	250mg/L

Facility : Detroit, MI

Ferric Chloride

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride LMG	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L

Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L
Ferri+Plus 2005	Coagulation & Flocculation	251mg/L
Ferri+Plus 2010	Coagulation & Flocculation	253mg/L
Ferri+Plus 2020	Coagulation & Flocculation	255mg/L
Ferri+Plus 2050	Coagulation & Flocculation	263mg/L
Ferri+Plus 2075	Coagulation & Flocculation	267mg/L
Ferri+Plus 2100	Coagulation & Flocculation	100mg/L
Ferri+Plus 2125	Coagulation & Flocculation	80mg/L
Ferri+Plus 2150	Coagulation & Flocculation	66mg/L
Ferri+Plus 2200	Coagulation & Flocculation	50mg/L
Ferri+Plus 2300	Coagulation & Flocculation	33mg/L
Ferri+Plus 2400	Coagulation & Flocculation	25mg/L
Ferri+Plus 3005	Coagulation & Flocculation	251mg/L
Ferri+Plus 3010	Coagulation & Flocculation	253mg/L
Ferri+Plus 3020	Coagulation & Flocculation	255mg/L
Ferri+Plus 3050	Coagulation & Flocculation	263mg/L
Ferri+Plus 3075	Coagulation & Flocculation	267mg/L
Ferri+Plus 3100	Coagulation & Flocculation	100mg/L
Ferri+Plus 3125	Coagulation & Flocculation	80mg/L
Ferri+Plus 3150	Coagulation & Flocculation	66mg/L
Ferri+Plus 3200	Coagulation & Flocculation	50mg/L
Ferri+Plus 3300	Coagulation & Flocculation	33mg/L
Ferri+Plus 3400	Coagulation & Flocculation	25mg/L
Ferri+Plus 4005	Coagulation & Flocculation	251mg/L
Ferri+Plus 4010	Coagulation & Flocculation	253mg/L
Ferri+Plus 4020	Coagulation & Flocculation	255mg/L
Ferri+Plus 4050	Coagulation & Flocculation	263mg/L
Ferri+Plus 4075	Coagulation & Flocculation	267mg/L
Ferri+Plus 4100	Coagulation & Flocculation	100mg/L
Ferri+Plus 4125	Coagulation & Flocculation	80mg/L
Ferri+Plus 4150	Coagulation & Flocculation	66mg/L
Ferri+Plus 4200	Coagulation & Flocculation	50mg/L
Ferri+Plus 4300	Coagulation & Flocculation	33mg/L
Ferri+Plus 4400	Coagulation & Flocculation	25mg/L
Ferri+Plus 5005	Coagulation & Flocculation	251mg/L
Ferri+Plus 5010	Coagulation & Flocculation	253mg/L
Ferri+Plus 5020	Coagulation & Flocculation	255mg/L

Ferri+Plus 5050	Coagulation & Flocculation	263mg/L
Ferri+Plus 5075	Coagulation & Flocculation	267mg/L
Ferri+Plus 5100	Coagulation & Flocculation	100mg/L
Ferri+Plus 5125	Coagulation & Flocculation	80mg/L
Ferri+Plus 5150	Coagulation & Flocculation	66mg/L
Ferri+Plus 5200	Coagulation & Flocculation	50mg/L
Ferri+Plus 5300	Coagulation & Flocculation	33mg/L
Ferri+Plus 5400	Coagulation & Flocculation	25mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Distribution Center - Lakeville, MN

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - 1 Philadelphia, PA

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Fort Worth, TX

Ferric Chloride

Trade Designation

Product Function

Max Use

Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Houston, TX**Ferric Chloride****Trade Designation**

Ferric Chloride LMG
 Ferric Chloride Solution DWG (LFCD)
 Ferric Chloride Solution EMD
 Ferric Chloride Solution LMG
 Ferric Chloride, Solution
 LFC
 LFC-DWG
 Liquid Ferric Chloride
 Liquid Ferric Chloride Drinking Water Grade
 (DWG)

Product Function

Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation

Max Use

250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L

Facility : Distribution Center - Petersburg, VA**Ferric Chloride****Trade Designation**

Ferric Chloride, Solution
 Liquid Ferric Chloride
 Liquid Ferric Chloride - DWG

Product Function

Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation

Max Use

250mg/L
 250mg/L
 250mg/L

Facility : New Martinsville, WV**Ferric Chloride****Trade Designation**

Ferric Chloride Solution DWG Grade
 Ferric Chloride, Solution
 Liquid Ferric Chloride
 Liquid Ferric Chloride Drinking Water Grade
 (DWG)
 Liquid Ferric Chloride LMG

Product Function

Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation
 Coagulation & Flocculation

Max Use

250mg/L
 250mg/L
 250mg/L
 250mg/L
 250mg/L

Polymer Blends[PY]**Trade Designation**

Ferri+Plus 1005

Product Function

Coagulation & Flocculation

Max Use

251mg/L

Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Number of matching Manufacturers is 1

Number of matching Products is 144

Processing time was 0 seconds